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EXAMINER

LIANG, REGINA

ART UNIT

PAPER NUMBER

2674

9

DATE MAILED: 02/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/901,137

Applicant(s)

LEE ET AL.

Examiner

Regina Liang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-22 and 25-46 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-22 and 25-46 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 37-46 been renumbered to claims 36-45.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 28 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 17 of copending Application No. 10/154,919. Although the conflicting claims are not identical, they are not patentably distinct from each other because both are directing to a LCD display receiving RGB gray scale signals from the outside and establishing RGB gammas curve based on the RGB gray scale data, and generating data voltage based on the gammas curve.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-10, 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1 and 7, it is unclear and confusing as to "stores values over corrected RGB gamma curves corresponding to the corrected picture data, and gamma-corrects the raw RGB picture data based on values over the stored corrected RGB gamma curves" since it is not

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understand what is meant by “the values over corrected RGB gamma curves”? Does applicant mean the values of corrected RGB gamma curves or some other values on top of the corrected RGB gamma curves?

As to claim 16, the term “FRC” (claim 16) has not been defined.

Claim Rejections - 35 USC § 102

6. Claim 28 is rejected under 35 U.S.C. 102(e) as being anticipated by Moon (US. Pub. No. 2002/0180680).

As to claim 28, Fig. 2 of Moon discloses a LCD device having gate lines and data lines, and comprising sequentially transmitting scanning signal to the gate lines, upon receipt of RGB gray scale data for displaying picture images from the outside, establishing RGB gammas based on the RGB gray scale data and predetermined imaginative gamma curves (e.g., see page 3, sections [0053], [0054]), and generating data voltages based on the established RGB gammas, and outputting the data voltage generated to the data lines (e.g., see page 6, section [0110]).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1-4, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al (US. PAT. NO. 5,359,342 hereinafter Nakai) in view of Ryan (US. PAT. NO. 6,075,514).

As to claim 1, Nakai discloses a LCD display comprising a LCD panel, a control unit having a color correction unit (look-up tables) generating corrected RGB picture data based on values of a predetermined imaginative gamma curve (e.g., see Fig. 4) established in accordance with the characteristic of the LCD panel (col. 4, lines 49-68 for example). Nakai does not disclose the control unit storing the generated corrected picture data at initial driving, after the initial driving, extracting corrected picture data corresponding to the raw RGB picture data from the memory and transmitting the extracted picture to the data driver. However, it is old and well known in the art that in order for a color correction unit to correct color values including applying look-up table correction to input color value data to obtain corresponding corrected output data must first perform a process that includes an initial step, and obtain initial values for correction. For example, Fig. 5 of Ryan teaches a system for correcting pixel color values comprising at initial step, obtaining corrected picture data using look-up table, storing the corrected picture data into the memory, after the initial step, extracting corrected picture data from the memory corresponding to the new input color values and outputting the extracted corrected picture data (col. 5, line 48 to col. 6, line 64 for example). Thus it would have been obvious, to one of ordinary skill in the art at the time the invention was made to modify Nakai to have the control unit for correcting pixel color values perform the various steps as discussed above as taught by Ryan so as to provide a faster color correction technique in which re-using output corrected color values, and thereby avoids re-determination of corrected values in many cases.

As to claim 2, Nakai teaches the number of bits in the corrected picture data is altered through making bit extension with respect the new picture data (e.g., col. 9, lines 60-61).

As to claims 3, 4, Nakai teaches the imaginative gamma curves is the G gamma curve adapted to the G picture data (e.g., see Figs. 8 and 9 of Nakai).

As to claim 33, Ryan teaches the first corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the input RGB data, and the second corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the first corrected RGB data (col. 5, lines 48-66).

As to claims 34, 35, Ryan teaches a RAM to store the first corrected RGB data (col. 6, lines 36-38).

9. Claims 5-7, 9, 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

As to claims 5-7, 9, Nakai does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known in the art that the LCD panel makes the display in a VA mode or a PVA mode. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

As to claim 10, Nakai teaches the corrected gamma curves having gray scale extension.

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10. Claims 11-15, 19-21, 25, 28-32, 36-39, 41, 44, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai and Ryan as applied to claim 1 above, and further in view of Takahara et al (US. PAT. NO. 5,196,738 hereinafter Takahara).

As to claims 11, 25, 28, 36, 44, Nakai as modified by Ryan does not disclose the LCD display comprising a plurality of gate lines and a plurality of data lines, switching circuits connected to the gate and the data lines, a scan driver and a data driver. However, Fig. 3 of Takahara teaches a LCD display device comprising a plurality of gate lines and a plurality of data lines, switching circuits (TFT) connected to the gate and the data lines, a scan driver and a data driver. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD display of Nakai as modified by Ryan to have TFT-LCD as taught by Takahara so as to provide a LCD display having a light weight and an excellent image quality.

As to claims 12, 19, 29-32, Nakai teaches normalizing the RGB gamma curves and controlling the gray scale levels of the picture signal as claimed (e.g., Figs. 7 and 8 and col. 5, lines 44-57 of Nakai).

As to claims 13, 14, Nakai as modified by Ryan teaches a color correction unit as claimed (see the rejection of claim 1 above). Fig. 1 of Nakai also teaches the control unit comprising a timing control unit (12, 13) outputting the transformed picture data to the data driver and generating timing signal for controlling the operation of the scan driver and the data driver.

As to claim 15, Ryan teaches the color correction unit further makes a treatment of dithering (col. 5, lines 34-35).

As to claim 20, 21, Nakai teaches the number of bits in the corrected picture data can be the same as the bit number of the inputted picture data or can be altered through making bit extension with respect the new picture data (col. 9, lines 60-61).

As to claim 37, Ryan teaches the correction unit having a first and a second memories (RAM 30 and cache memory 22 or register of CUP 20 or a ROM 31) for storing the first corrected RGB data, and a memory controller (CPU) to control the first and second memories.

As to claims 38, 45, Ryan teaches the first corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the input RGB data, and the second corrected RGB data has a bit number (32 bits) equal to the bit number (32 bits) of the first corrected RGB data (col. 5, lines 48-66).

As to claims 39, 41, Ryan teaches the first memory comprising a RAM 30 and the second memory comprising a ROM 31.

11. Claims 16, 17, 22, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claim 11 above, and further in view of Saxena et al (US. PAT. NO. 5,777,590 hereinafter Saxena).

As to claims 16, 22, 40, Nakai as modified by Ryan and Takahara does not disclose the multi-gray scale transformation is made through frame rate control FRC. However, Saxena teaches a device using frame rate control modulation for intensity shading for each pixel for providing gray scale shading for a LCD display device. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakai as modified by Ryan and Takahara to use a frame rate control FRC in the multi-gray scale transformation as

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taught by Saxena so as to support various level intensity shadings using a frame rate control scheme and ensure that the pixel drivers in the display have balanced loading.

As to claim 17, Nakai as modified by Ryan teaches the color correction unit comprises a memory control unit (CPU).

12. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan, Takahara, Saxena as applied to claim 17 above, and further in view of Huang et al (PUB. NO. 2001/0045946 hereinafter Huang).

Nakai as modified by Ryan, Takahara and Saxena does not disclose the memory control unit comprising a non-volatile memory for storing picture data. However, it is well known in the art that a memory control unit comprising a non-volatile memory (col. 5, section [0062] of Huang). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the memory control unit of Nakai as modified by Ryan, Takahara and Saxena have a non-volatile memory since Huang teaches this type of memory complements the low power characteristic of the Ch-LCD.

13. Claims 26, 27, 42, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai, Ryan and Takahara as applied to claims 11, 25, 36 above, and further in view of admitted prior art (page 1, line 13 to page 4, line 17, and Figs. 1-6).

Nakai as modified by Ryan and Takahara does not disclose the LCD panel makes the display in a VA mode or a PVA mode. However, the admitted prior art teaches it is well known in the art that the LCD panel makes the display in a VA mode or a PVA mode. Thus it would

have been obvious to one of ordinary skill in the art at the time the invention was made to modify the LCD panel of Nakai as modified by Ryan and Takahara to make the display in a VA mode or a PVA mode as taught by the admitted prior art for controlling the gray levels of the display.

Response to Arguments

14. Applicant's arguments with respect to claims 1-7, 9-22, 25-45 have been considered but are moot in view of the new ground(s) of rejection.

Applicants' remarks regarding the double patenting rejection on page 20 are not persuasive. Claim 1 of co-pending application is directed towards a liquid crystal display device, it is inherent that the LCD device has to have sequentially transmitting scanning signals to the gate lines in order to provide a display on the LCD device. Furthermore, claim 17 of co-pending application recites the driving steps of sequentially transmitting scanning signals to the gate lines.

Applicants' remarks regarding Moon on pages 20-21 are not persuasive. The effective date of Moon is June 4, 2001, which is earlier than July 10, 2001, the effective filing date of applicants' application. Therefore, Moon is a valid reference.

Applicants argument regarding claim 1 on page 21 in that none of applied references teaches or suggest "the color correction unit generates corrected RGB picture data based on values over a predetermined imaginative gamma curve established in accordance with the characteristic of the liquid crystal display panel" are not persuasive. Nakai teaches a control unit having a color correction unit (look-up tables, for example see Fig. 1) generating corrected RGB picture data based on values of a predetermined imaginative gamma curve (e.g., see Fig. 4)

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established in accordance with the characteristic of the LCD panel (col. 4, lines 49-68 for example).

Applicants' allegation regarding claim 11 on page 22 are not persuasive. Nakai teaches a color correction unit (look-up tables) for correcting RGB picture data, and Fig. 5 of Ryan teaches a system for correcting pixel color values comprising at initial step, obtaining corrected picture data using look-up table, storing the corrected picture data into the memory, after the initial step, extracting corrected picture data from the memory corresponding to the new input color values and outputting the extracted corrected picture data (col. 5, line 48 to col. 6, line 64 for example). Therefore, the combination of references Nakai and Ryan teaches the limitations as claimed.

Applicants' remarks regarding claims 5-7, 16-17, 18, 22-28 on pages 21-25 are not persuasive, see the rejection above.

Conclusion

15. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

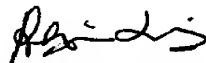
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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Regina Liang whose telephone number is (703) 305-4719. The examiner can normally be reached on Monday-Friday from 9AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Hjerpe, can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.


REGINA LIANG
PRIMARY EXAMINER
ART UNIT 2674

RL
2/17/04